

**A SYSTEMATIC REVIEW OF PHYSICIAN-PATIENT INTERACTIONS AND THE EFFECT
OF HEALTH CARE PROVIDER BIAS AND KNOWLEDGE ON ADOLESCENT
CONTRACEPTION COUNSELING IN DEVELOPING COUNTRIES**

**COMPREHENSIVE REVIEW:
CONTRACEPTIVE USE AND IMPACT OF PHYSICIAN COUNSELING FOR ADOLESCENT PATIENTS
OF METHOD CHOICES AND SIDE EFFECTS IN DEVELOPING COUNTRIES**

A thesis submitted to the University of Arizona College of Medicine – Phoenix
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Abstract

Unmet need for contraceptives in developing countries remains a social and health problem and adolescents are more likely to struggle in starting long-acting contraceptive methods, often due to side effect or other concerns. This study aimed to analyze the biases in the provider-patient relationship and counselling practices for adolescent patients in developing countries. Attention was placed on patient's preferred method, cultural and moral biases, knowledge gaps of patient and providers, side effect knowledge, and attitudes impacting the relationship upon counseling quality and likelihood of contraceptive use. Systematic review of articles with MeSH terms "developing countries," "contraception," "adolescents," and other search terms yielded 6745 articles; 14 articles were chosen for further review. Findings highlight negative impacts of providers' ethical concerns and knowledge gaps when addressing method use and side effects. Low knowledge base by providers of varying skill level also highlight a need for improved training on family planning methods.

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Introduction

In many lower and middle income countries (LMICs), reproductive health and family planning programs were initiated in the early 1960s to address high fertility rates and an unmet need for modern contraceptive use (Wulifan, Brenner, Jahn, & De Allegri 2015). Particularly in developing countries, unmet need is a major factor leading to unintended pregnancies, early childbearing, and unsafe abortion procedures, all of which lead to high maternal and infant mortality rates in these countries (Wulifan et al 2015). Despite improvement of contraceptive use, unmet need remains high. While the rate dropped from 3.7% from 1990 to 2010, the unmet need of women of reproductive age in developing countries persists at 12.8% with regions such as Africa and Polynesia showing even greater levels at 23.3% and 43.3% respectively (Alkema, Kantorova, Menozzi, & Biddlecom, 2013). Projections predict that 161 million married women of reproductive age will have continue to have an unmet need for modern contraceptive methods in 2020 (Alkema et al 2013).

Adolescents and young women prove a very vulnerable population when discussing uptake of reversible birth control methods. Younger women were “often less knowledgeable in modern family planning methods and less likely to engage in family planning discussion with health workers compared to older women” (Wulifan et al 2015). Increased contraception use and appropriate family planning care provision has been linked to lower teenage pregnancy rates, reduced rates of unwanted pregnancies, and reduced abortion rates. All factors have been shown to allow women to increase their economic earnings, continue secondary and tertiary education, and increased agency in developing countries (Germain, Sen, Garcia-Moreno, & Shankar, 2015). Better family planning care has also been linked to lower rates of maternal mortality, reduction of childhood deaths, and reduction of poverty and hunger along with female empowerment (Cleland, Bernstein, Ezeh, Faundes, Glasier, & Innis, 2006; Snow 2015). An analysis of maternal death attributed increased contraception use to an estimated 44% reduction in maternal mortality in 2008 (Ahmed, Li, Liu, & Tsui, 2012).

Overall, contraception methods are skewed in the distribution and efforts. In 34 of 96 countries reviewed in DHS surveys, one method of contraception accounted for over half of all use and frequently, two main methods accounted for most use (Cleland et al 2006). It is unclear whether this is due to legislative constraints and governmental promotion of specific methods or due to biases of family-planning staff at the local level. Discontinuation and poor adherence after starting a new method are attributed to side-effects like irregular menstrual bleeding and other fears of weight gain or rare but serious risks like breast cancer (Cleland et al 2006). Contraceptive choices may be limited for those who choose to switch or initiate a different birth control both due to restricted access or due to unfamiliarity with other methods, consequently increasing the risk of unintended pregnancy. For example, even studies in the US highlight how many practitioners counselling on IUDs to adolescents among other methods still retain “discomfort” and “personal feelings” about the method that were not data-driven or evidence-based (Berlan, Pritt, & Norris 2017).

While many studies have evaluated the patient’s motives for use or nonuse of contraceptive methods (including demographic factors, male partner and family opposition, and fertility and marriage status), no review has yet been conducted of the influence of providers on the provision of contraceptives and addressing side effect concerns in developing nations. For many patients who make the personal decision to pursue family planning care despite cultural stigmas, this provides a crucial opportunity to educate patients on use, side effects, and concerns of side effects and reduce discontinuation rates and promoting generalized care. Better approaches in addressing these factors will inform current barriers on the ground and planning of future programs and efforts to reduce undesired pregnancy in young women.

Objectives

This review aims to estimate the prevalence of negative and positive impacts of family planning provider biases and knowledge of use on adolescent contraception use. The review also aims to assess common side effects perceptions by adolescents and their sources of misinformation and the impact of provider on dispelling myths with contraceptive use.

Research will attempt to answer the following research question: *In developing countries, what are the most prevalent professional and cultural limitations that family planning providers have when providing contraception and addressing side effects for young adults aged 15-24 years old?* Our hypothesis predicts that the limitation of providers' education and knowledge on contraception will be minimal in comparison to negative perceptions posed by providers. As such information of normal side effects will less likely to be discussed with patients and will instead arise from social networks for young patients.

Methods

This study will be a systematic review of the current literature on the topic with an accompanying comprehensive review. Methods primarily rely on a literature search using online databases including PubMed and Google Scholar. PubMed sources will be search using the following MeSH search terms and combinations for articles. Articles will be screened for the initial relevance thru reading of the title and abstract. Qualifying articles will be analyzed further within the inclusion and exclusion criteria for relevance. Appropriate articles will be analyzed to best fit the outcome measures.

Search terms for MeSH:

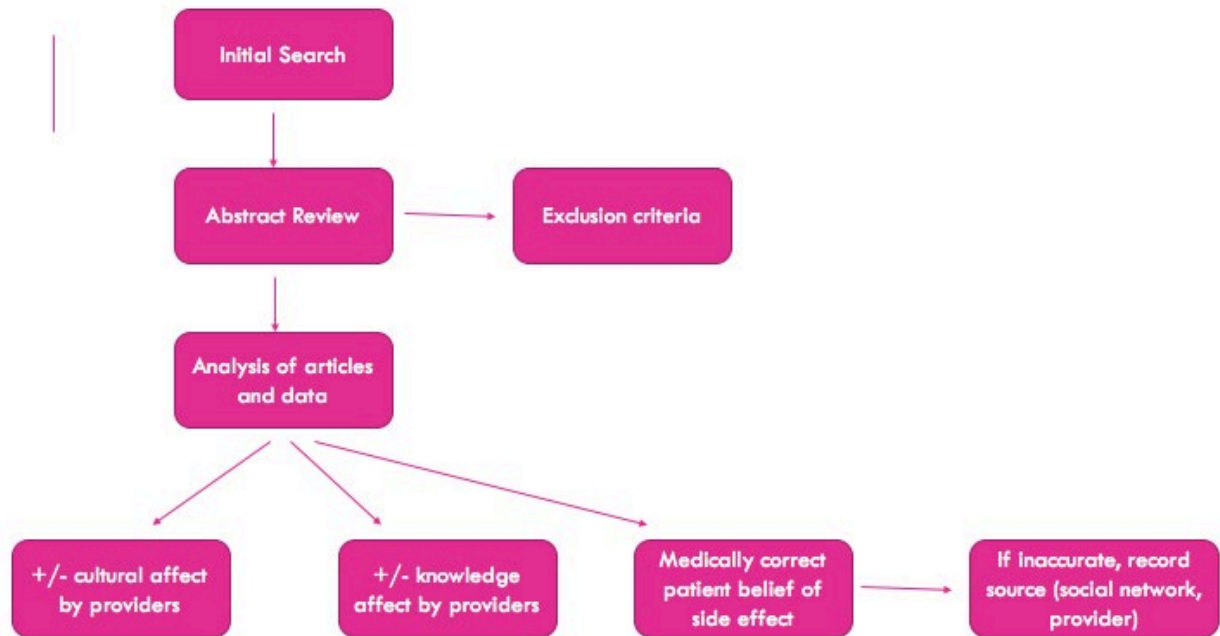
- “developing countries”
- “contraception”
- “adolescent”

Additional search terms to be used in combination with MeSH terms

- “side effects”
- “provider”
- “attitudes”
- “adolescent” (if not used already), “youth”, “teen”
- “LARC”

Restrictions to articles

- Published between 2000-2017
- Study conducted in developing countries
- Females aged 15-24 years old
- English language articles only
- Must discuss patient-provider interactions and/or knowledge assessment of providers
- Exclude articles on abortion care



Articles that pass evaluation of the abstract will be included for further assessment in relation to the desired outcomes. Country of origin and the size of study will be recorded. Each article will be evaluated for evidence of a positive or negative (+/-) influence of provider interventions and perspectives. These will be categorized into cultural bias or knowledge bias. An example of cultural bias would be an objection due to age and illegal restriction, moral refusal, or religious or societal objections. An example of knowledge bias would include lack of knowledge beyond one type of method or provider unease and unfamiliarity with family planning methods. Additionally, as many articles exploring patient-provider education conduct separate interviews with patients, assessment will be made of medically correct side effects versus medically unsupported side effects. Examples of medically correct side effects for non-surgical and non-hormonal methods are cited below:

Normal side effects of birth control	Exaggerated or incorrect side effects of birth control
<p>Minor, common: Weight gain, irregular or heavy menstrual bleeding, amenorrhea, headache, nausea, dizziness, skin changes</p> <p>Moderate: depression, irritability, reduced sexual desire, breast cancer</p> <p>Adverse effects: clotting risk (DVT, PE), hypertension</p>	<p>Irreversible infertility of man or woman, abdominal cancer, birth defects, transmission of STIs through method, pain with IUD/implants,</p>

An article will be noted for positive or negative effects, with each noted negative or positive effects eliciting a “+/-” per reason. In articles with analysis of patient accounts and knowledge assessment, the correct and incorrect side effects will be documented and counted; when noted, the source of incorrect side effect knowledge will be recorded (ex: mother, health care worker, friend). For patient focused analysis, the patient’s preferred method will be recorded when possible. For physician/provider focused analysis, provider preference will be noted along with medical incorrect or correct knowledge of side effects along with source of information or training sessions. Papers discussing abortion as a type of family planning method and post-abortion care and counselling, due to ethical controversy by individuals and legal ramifications varying between nations, will be excluded during this analysis.

Results

Overall

Searches were completed on NIH and PubMed for relevant articles. Initial search with MeSH terms combined yielded 2987 results; exclusion by date and language yielded 243 results. Additional search combinations including either “developing countries,” adolescent” and “contraception” with key terms such as provider yielded an additional 3758 results, with additional 168 articles after limiting for date and language. Combined searches yielded a total 6745 unique articles with 411 articles after limiting for date and language. Of the 411 articles, further review excluded 138 articles as those dealing with abortion, HIV or overall lack of relevance, leaving 273 articles. A total of 76 articles were selected for abstract review; 29 articles were selected for relevance to provider perspectives and access, and 47 articles were chosen for their relevance to youth and adolescent contraceptive care. After abstract review, 14 were chosen for in-depth analysis for their relevance to adolescent care and either quantitative or qualitative analysis of contraception counselling and relationships between providers and patients. This is depicted in Figure 1. The qualities of the papers are highlighted in Table 1 including the country and contraceptive methods discussed.

Figure 1. Article evaluation

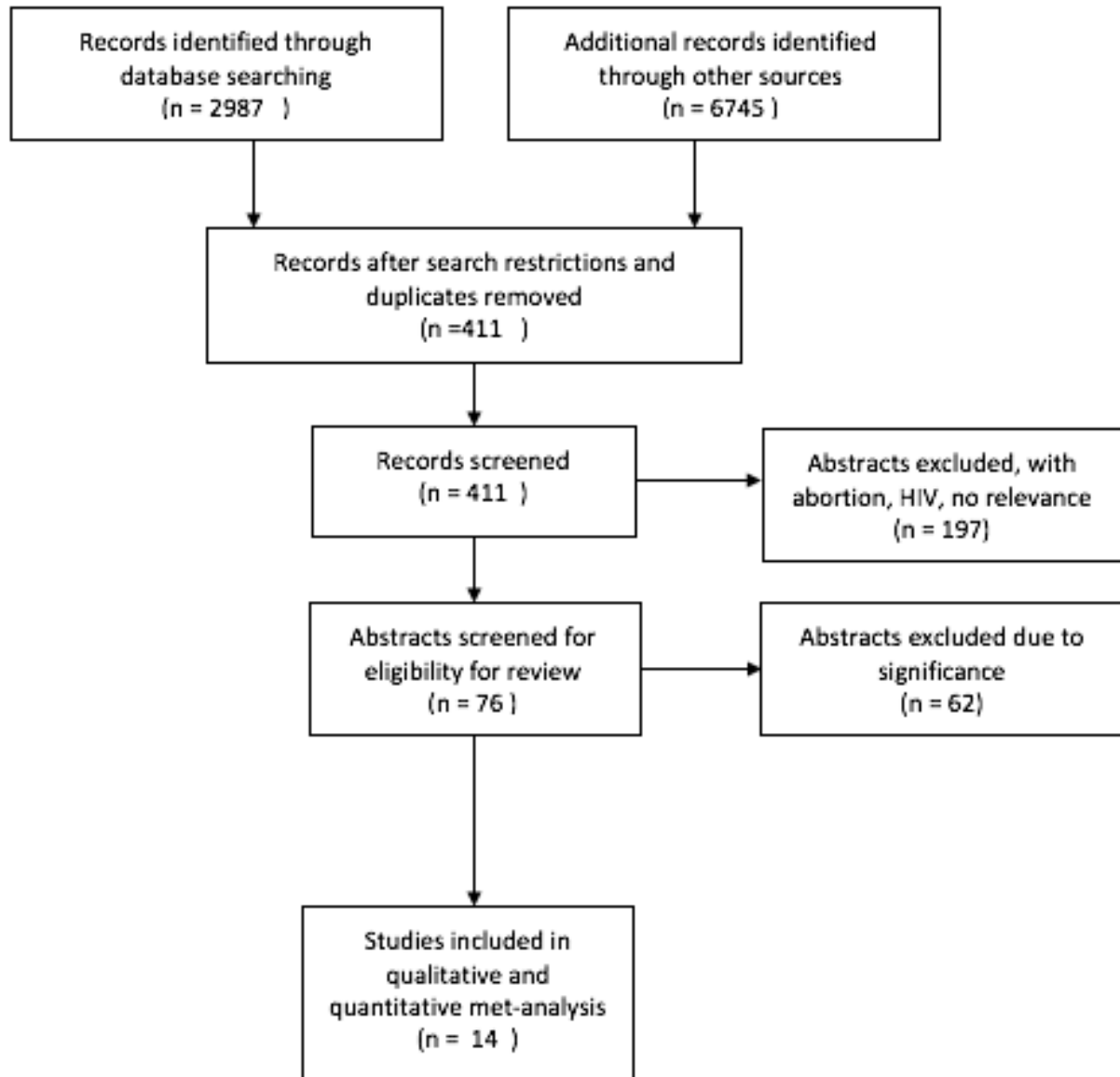


Table 1: Qualities of articles for systematic review

Article #	Year	Author(s)	Title	Journal	Country	Type of Method focus (all vs. specific) *
1	2003	Chen J, Smith KB, Morrow S, Glasier A, & Cheng L	The acceptability of combined oral hormonal contraceptives in Shanghai, People's Republic of China	<i>Contraception</i>	China	Combined OCPs, alternatives include rhythm method or no method
2	2004	Tu X, Cui N, Lou C, & Gao E	Do family-planning workers in China support provision of sexual and reproductive health services to unmarried young people?	<i>Bulletin of World Health Organization</i>	China	All modern methods
3	2006	Ebuehi OM, Ebuehi OA, & Inem V	Health care providers' knowledge of, attitudes toward and provision of emergency contraceptives in Lagos, Nigeria	<i>International Family Planning</i>	Nigeria	ECPs
4	2006	Wood K, Jewkes R	Blood Blockages and Scolding Nurses: Barriers to Adolescent Contraceptive Use in South Africa	<i>Reproductive Health Matters</i>	South Africa	Modern methods, alternative or traditional methods
5	2008	Mngadi PT, Zwane IT	Health providers' perceptions of adolescent sexual and reproductive health care in Swaziland	<i>International Nursing Review</i>	Swaziland	Modern methods and alternatives
6	2011	Nalwadda G, Mirembe F, Tumwesigye NM, Byamugisha J, & Faelid E	Constraints and prospects for contraceptive service provision to young people in Uganda: provider's perspectives	<i>BMC Health Service</i>	Uganda	Modern methods and alternatives
7	2013	Nishtar NA, Sami N, Alim S, Pradhan N, & Hasnain FU	Determinants of contraceptives use amongst youth: an exploratory study with family planning service providers in Karachi, Pakistan	<i>Global Journal of Health Sciences</i>	Pakistan	Modern methods and alternatives

8	2013	Godia PM, Olenja JM, Lavussa JA, & Quinney D	Sexual reproductive health service provision to young people in Kenya: health service providers' experiences	<i>BMC Health Service</i>	Kenya	Modern methods and alternatives
9	2014	Meskele M, Mekonnen W	Factors affecting women's intention to use long-acting and permanent contraceptive methods in Wolaita Zone, Southern Ethiopia: A cross sectional study	<i>BMC Women's Health</i>	Ethiopia	LARCs (IUDs, implants) and permanent methods (male/female sterilization), injectables (Depo)
10	2015	Tumlinson K, Pence BW, Marshall SW, & Speizer IS	Quality of Care and Contraceptive Use in Urban Kenya	<i>International Perspectives on Sexual and Reproductive Health</i>	Kenya	Modern methods and alternatives
11	2016	Jain AK	Examining Progress and Equity in Information Received by Women Using a Modern Method in 25 Developing Countries	<i>International Perspectives on Sexual and Reproductive Health</i>	Multi-country, 16 within sub-Saharan Africa, 9 in other regions; in-depth analyses of Cambodia, Rwanda and Tanzania	All methods including implants, IUD, injectables, pills, sterilization
12	2016	Capurchande R, Coene G, Schockaert I, Macia M, & Herman Meulemans	'It is challenging... oh no, nobody likes it!': a qualitative study exploring Mozambican adolescents and young adults' experiences with contraception	<i>BMC Women's Health</i>	Mozambique	All; categorizes to "modern, natural/traditional, indigenous methods." Natural/traditional include fertility based awareness methods
13	2017	Ayanore MA, Pavlova M, & Groot W	Context-specific Factors and Contraceptive Use: A Mixed Method Study among Women, Men and Health Providers in a Rural Ghanaian District	<i>African Journal of Reproductive Health</i>	Ghana	Modern methods (IUD, pills, implants) and alternatives
14	2017	Jain AK	Information About Methods Received by Contraceptive Users in India	<i>Journal of Biosocial Sciences</i>	India	Modern methods including pills, IUD, injectable, sterilization

***Method abbreviations:** ECP- emergency contraceptive pill, IUD- intra-uterine device, OCPs- oral contraceptive pills (pills and OCPs used interchangeably)

All journal sources come from peer-reviewed sources with English publication. Sources include a mix of high impact and low impact journals and include others of multiple country origins. Reviewed papers predominantly represented sub-Saharan Africa and Asian countries with one paper including a multi-country analysis of African and Asian countries. Jain's multi-country study focused on DHS studies from the following countries: Benin, Burkina Faso, Cameroon, Ethiopia, Ghana, Malawi, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Tanzania, Uganda, Zimbabwe, Bolivia, Cambodia, Colombia, Egypt, Honduras, Indonesia, Nepal, Pakistan, and the Philippines (Jain 2016). Studies from sub-Saharan countries focused on Kenya, Ethiopia, Uganda, Nigeria, Ghana, Mozambique, South Africa, and Swaziland with specific analysis into Rwanda and Tanzania in Jain's study. Asia was represented with studies from China, India, and Pakistan with specific analysis into Cambodia in Jain's study. China and Kenya were well-represented with 2 focused studies per each. The majority of papers focus on modern contraceptive methods, typically referring to a mix of IUDs, implants, oral contraceptive pills, injectable medications, and sterilization with one focusing on emergency contraceptive pill provision, one on combined oral contraceptive pills versus alternatives, and one on long-acting and permanent methods. Some studies concretely define traditional methods (rhythm method or fertility based awareness methods) versus traditional methods which range depending on the local traditions and often include herbal medications and other unproven methods. Studies delving into traditional methods had at least one in-person interview component.

Table 2 focuses on study design and the qualities of the participants including age, role (patient, partner, or provider) and number included.

Table 2: Study type and participant demographics*

	Study Type	Age target (years)	Average Age	Married? (Y/N/B) **	Number of participants
1	Questionnaire survey of patients (verbal) and gynecologists (written and anonymous)	18-35	26.9y/o +/- 4.2 yrs; 30.6% women aged 24 or less	B; 69.4% married, 7.6% single, 22.2% cohabiting	500 patients, 89 gynecologists
2	F2F interviews for survey and 8 FGDs with FP staff, 8 FGDs with FP providers	18-24	N/A	N	1927 FP workers (965 providers, 962 community-based distributors), 123 FP workers in 16 FGDs
3	Self-administered written questionnaire of HCPs	N/S	N/A	B	256 HCPs (45.3% physicians, 27.0% nurses, 18.0% pharmacists, 9.8% CHW)
4	Qualitative study with IDIs and patient FGDs, individual and group discussion with nursing staff	14-20	N/S	N	35 patients for IDIs, 5 FGDs; 14 nursing staff for individual and group interviews
5	Anonymous written questionnaire with descriptive statistics and content analysis for key themes	"adolescents", otherwise N/S	N/S	N/S	56 HCPs (physicians, midwives, nurses, nursing assistants) in 11 clinics
6	Cross sectional study of population for site selection, followed by verbal questionnaires for F2F interviews	15-24	n/a	B	102 total of public, private non-profit, private for-profit health care providers (physicians, midwives, nursing/nursing assistants); 67% midwives
7	Qualitative and exploratory study with 10 IDIs with HCPs	18-24	N/S	Y	10 total (2 physicians, 4 "lady health visitors", 4 "lady health workers", 2 pharmacists)
8	Qualitative study of 8 health facilities, 19 IDIs and 2 FGDs with HCPs	10-24	N/S	B	19 IDIs, 2 FGDs
9	Cross-sectional study of mixed methods with individual patient interview and questionnaires; additional IDIs of patients and providers	15 to over 34; 126 (30.7%) were 15-24yrs, 249 (60.6%) were 25-34yrs	26.7	B (97.1% married)	411 patients; 6 FP users, 6 FP healthcare providers
10	Survey data of patients and provider interviews linked to exit interview of patient; followed by multivariate analysis	15-49	N/S; Population 6% 15-19yo, 27% 20-24y/o, 30% 25-29y/o	B	3990 patients, 260 facilities, 126 clinics for exit interview

11	DHS survey evaluation with MII calculated	15-49	N/S	Y	25 national DHS surveys for 2 separate years
12	Qualitative survey with FGDs, IDIs, informal conversations with teenaged patients; split equally by gender	15-24	19	N	16 IDIs, 8-13 each per FGDs (42 patients total), 4 informal conversations
13	Mixed methods; quantitative of multiple health facilities; qualitative data thru IDIs with female patients, male partners, and midwives	18-28 (quantitative), 15-49 y/o (qualitative)	26-28	B (90% married)	<i>Quantitative:</i> 6 health centers, 4 clinics, 12 community services centers, 2 private facilities. <i>Qualitative:</i> 30 female patients, 10 male partners, 3 midwives
14	3rd National Family Health Survey (India) with MII calculation	15-49	N/S	Y	13,152 women

***Abbreviations:** FP- family planning, IDI- in-depth interviews, FGD- focus group discussions, MII -Method Information Index, HCPs- health care professionals, F2F- face to face, DHS – Demographic Health Survey, N/S- not specified

**** Marital status:** Studies focusing solely on married women only or single women only are “Y” and “N” respectively. “B” indicates studies including both populations and where available percentage of married women is specified

Table 2 highlights the common use of qualitative surveys, interviews, and focus group discussions to describe and further explore this subjective experience. Multiple studies used interviews in tandem with quantitative measurement in regard to surveys with knowledge-based or multiple choice based components in addition to analysis of common themes in qualitative studies. Two articles, by the same author Jain, specifically use national health survey or national DHS data for information assessment to quantify his Method Information Index (MII). This MII value is defined as a value from 0 to 100, which increases with each participants' positive response to the following 3 questions: 1) *Were you informed about methods?*, 2) *Were you informed about the side effects?* and 3) *Were you told what to do if you experienced side effects?*. His studies also include older aged demographics with ages ranging from 15-49 years old along with Studies 9, 10, and 13 for the qualitative component. Mngadi and Zwane's paper (article 5) did not specify the age range or average but defined its target as subjectively described "adolescent" patients in interviews with health care providers. Of those who document an average age, three papers note an average age of 26-27 for study patients with one averaged at 19 years old.

Studies varied in their studies of unmarried alone, married alone, or both married and unmarried populations with roughly half representing each. At least 3 studies of both married and unmarried women had a majority of respondents as married with two papers noting over 90% married participants (Articles 9 and 13) and others unspecified. Mngadi and Zwane's paper (Article 5) did not specify the marital status, however the text implies the patients described are unmarried adolescents. Sample size of the interviewed groups varied in size. The smallest sample size was 10 interviewees (Article 7) and the largest sample (excluding national surveys) included 3990 patients at over 260 facilities (Article 10). On average, studies with in-depth interview components had smaller sample sizes, typically less than 100, however this was not the case for all studies. Only 4 studies (Articles 3, 5, 11, and 14) did not have any interview component, however Mngadi and Zwane allowed for written narrative and thematic analysis of responses for their results.

Additionally, of note, articles tended to focus on either patients' or provider perspectives with few including both. Six articles focused on healthcare provider perspectives alone (Articles 2, 3, 5, 6, 7, and 8), three articles focused on the patient perspective alone (Articles 11, 12, and 14), and five articles focused on both the patient and providers' perspectives of care for analysis (Articles 1, 4, 9, 10, and 13). Even within these interviewing both, the study tended to put heavier focus on one over the other, often with greater interviews of patients rather than providers. The following tables highlight key findings from both patient and provider perspectives and noted impacts of culture, knowledge base, moral and ethical dilemmas, and structural practices on the counselling process and patient/provider relationship in regard to contraceptive use. Table 3 delves further into the patient perspective and knowledge in expressing the patients' preferred methods when defined by the article and correct and incorrect knowledge about side effects and method use. Table 4 focuses on the provider perspective and knowledge base in addition to addressing the source of information for reference. Narrative elements are included here to inform separate ethical or moral dilemmas for the provider.

Table 3: Patient-focused perspective and effects of culture and knowledge base*

Article #	Pt preferred method	(+/-) culture	(+/-) knowledge	Pt: Medically correct belief of side effect	Pt: Medically incorrect side effect or method information
1	condoms 59.8%, rhythm method 27.8%, no method 20.8%, IUD 15.6%, h/o OCP use 12%	n/a	33% of patients had no knowledge of OCP effectiveness; those who knew were more likely to use it (+)	48% weight gain, 12.8% nausea; Of 440 women who had never used OCPs, 6.8% had discussed taking them with a doctor and 46.7% had concerns about risk/SE	12.1% of patients had concern for congenital malformation, 2.4% of breast cancer risk
2	n/a	n/a	>90% of providers that patients had inadequate or limited education on sexual health (=)	n/a	n/a
3	n/a	n/a	n/a	n/a	n/a
4	N/S	Noted community influences on patient's desire for contraceptives and beliefs including male virility, positive female views of early pregnancy. Religious leaders spread poor knowledge of contraceptives and poor transfer of SRH education within families, but none from providers (=)	Patients most commonly noted friends for contraceptive knowledge source, some reported occasional visits to clinics (-)	Belief expressed of "made sick"; blood blockage (amenorrhea) as unsafe causing abdominal pain, swelling, headache, tiredness, weight gain, skin changes	Patients reported beliefs of: "spoiling eggs" with BC use, permanent infertility; weight loss, loss of sexual function; condoms became stuck inside vagina/uterus; exaggerated concerns with amenorrhea ("blood blockage") also linked to infertility; time to pregnancy after stopping correlated to time spent on medication
5	N/a	n/a	n/a	n/a	n/a
6	N/S	Providers viewed disapproval by male partners (49%) and peers (13%), cultural norms of big family (43%), religious beliefs (30%) as affecting BC use with low perceived demand in community	72% of providers viewed low information about contraceptives and 63% of providers viewed fear of SE as reasons for nonuse of contraceptives (-)	n/a	n/a

7	N/S	Patients reported feared exclusion from religion and community practices for using BC or sterilization methods. Providers expressed effect of partner and family in BC decision making (=)	Physicians argued had greater patient compliance with increasing education until Grade 10 (=)	n/a	Patient had belief that IUD would migrate to brain or heart, cause male impotence, concern to cause infection or sepsis
8	n/a	Providers expressed youth were "difficult to work with" and that patients were ignorant and hide information (-)	Providers expressed patients get answers from internet and would ask questions of HCPs from this (+)	n/a	n/a
9	Multiple methods used by patients at time of interview (injectables, IUDs); patient expressed future use intend for implant 91.7%, IUD 5.7%, female sterilization 3.2%	Patient had concern for privacy in clinic with IUD insertions (-); 15-24yrs pts 46.8% likely to use LARCs, the greatest proportion of respondents (+)	Knowledge of IUDs by patients was poor and had limited uptake, fear associated with sterilization methods (=); increased knowledge score associated with 1.77 increased likelihood of using contraceptives (+)	Concern for pain with insertion and removal of implant, migration of IUD	Concern for effect on mental health; that it could cause HTN (46.5% of respondents), cancer, anemia, migration of implants to vital organs, danger with sterilization; expressed belief IUDs restrict normal activities, concern for infertility
10	57% patients reported being asked about their preferred method, otherwise N/S; 47% clients reported receiving info on multiple methods	91% patients had felt comfortable asking questions; Of note, 35% of patients said their provider asked about reproductive goals; 33% said provider treated them "very well," 21% said facility staff treated them "very well;" women feeling they were treated very well more likely than others to be using contraception (1.1) and greater likelihood of returning (1.2), with greatest effect (1.44) in 15-19yrs vs (1.30) in 20-24yrs vs (1.18) in 25-29yrs (++)	66% reported provider explained proper use, 41% said providers helped them select a method; 79% felt all questions had been answered. Women attending facilities who received help with method selection had 6% greater likelihood of contraceptive use (+)	n/a	n/a

11**	N/S by patient	Median MII did not differ by women's age, ranged from 42-45%; in SSA, ages 15-19yrs showed 33% vs. 42-47% in all other age groups; other regions combined showed difference of 5% between age groups at 37% vs 43%	Weighted average MII for all countries at first date was 34%, second at 5 yrs later was 39%. SSA was 44% and 48%, other countries at 29 and 34%. Lowest MII in Pakistan (19% and 13%) and highest in Tanzania (64% test 1) and Burkina Faso/Malawi (65% test 2)	n/a	n/a
12	Interviews noted men choose the type of method; of modern methods, patients preferred withdrawal over IUDs. IUDs were strongly disliked by male members	Presence of plants and seeds for traditional methods. Often young women consult with "Misconducts" or older women to consult on SRH, marriage and tap into community knowledge (=)	Changes in methods done without consulting healthcare nurses; greater rate of contraceptive use after 1st pregnancy (-)	Patients aware of need to use BC for "safe sex," need for condoms to prevent STIs	Indigenous contraceptives believed more effective by young women, commonly used in together with modern method
13	Unmarried young women 3 times more likely to express desire for future contraceptive use (type N/S)	Some women in interviews embrace family spacing, strong impact of husband on use and preferred method if able to hide use (=)	Young women with focused counselling services were most likely to "be empowered to overcome opposition at home as well as address side effects"; midwives noted contraceptive misinformation high among women "due to low educational standards among women" (+, =)	n/a	Patients expressed concern for cancer, infertility: "contraceptives cause cancer, especially the pills....My close friend cannot give birth because she was operated upon to rectify that problem caused by her use of family planning"

14**	N/S	Adjusted OR for receiving counseling +1.00 (15-19yrs), +1.58 (20-24yrs), +1.94 (30-34yrs), +1.99 (35-39yrs)	IUD users received more information than other methods on SE, how to manage or other methods (53%, 49%, 46% respectively) with lowest as sterilization (29%, 23%, 24% respectively); MII scores for each method: pill (17), IUD (32), injectable (17), sterilization (13); users for each who received "no information" pill (52%), IUD (35%), injectable (44%), sterilization (63%); only 15.6% for total information (1 in 6 receiving al information)	n/a	n/a
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*Articles 3 and 5 not included as noncontributory to patient perspective

**Articles 11 and 14 not included on (+/-/=) analysis due to separate MII metric

***Abbreviations: BC- birth control, SE- side effects, SRH- sexual and reproductive health, LARC- long acting reversible contraceptives (IUDs, implants), SSA- sub-Saharan Africa, HTN- hypertension

Table 4: Provider perspective with patient

Article #	(+/-) culture	(+/-) knowledge	Provider: Medically incorrect info	Provider: Moral/ethical or cultural bias	Source of information
1	n/a	33% of docs accurately identified effectiveness at 99-99.99%; 93.3% knew correct instructions for missed pill, 83.1% knew for those missing >2 pills (-, +)	21.3% HCPs thought risks in OCPs (9.0% breast cancer, 6.7% VTE), statistically significant greater concern with shorter working experience and younger doctor (-)	n/a	Doctors source for OCP knowledge: 86.5% from textbooks, 37.1% from FP handbooks, 27% from FP workshops
2	>80% of FP workers expressed willingness to provide information/counseling to unmarried young people regardless of views, except for Hebei (65%) and Henan (76%) regions; often attached to condition of age >18yrs. Urban regions showed more conservative values vs rural regions (+)	Providers as more educated, younger than distributors (+)	n/a	>92% providers wanted more in-depth/explicit info for unmarried adolescents, however varying support depending on content and timing; 53% argued for inclusion of contraceptive education. Belief of best start time was 30.0% <18yrs, 36.7% 18-19yrs, 33.3% >20yrs	n/a
3	55% HCPs did not know legal status of ECPs, 4% HCPs thought illegal; 32% HCPs thought adolescents were appropriate candidates for ECPs (-,-)	97% physicians vs. 52% CHW had heard of it. 82% correctly identified methods; only 24% had good knowledge vs 59% having fair knowledge; physicians had best knowledge (35%) vs CHW (23%), pharmacists (15%), or nurses (9%); OB and community workers as best knowledge, worse in GPs, midwives; only 10% of those who provided pills identified name, dose, or timing correctly (+, -)	44.4% HCPs believed ECP only effective within 24hr window, 13% induced abortion, 26% prevent pregnancy and induced abortion, 13% did not know	15% of those who knew "would give the woman a serious reprimand" for ECP use, 6% would do nothing as personally opposed to abortion	Lectures, FP workshops and seminars

4	Strong religious presence in community; teens expressed perception of stigmatization reinforced by nurses, older staff, and patients in clinic waiting rooms. Nurses often uncomfortable with giving prescriptions without parent permission; patients were scolded, felt they could not stand up to nurses; one nurse expressed pts as truants and criminal behavior (-, -)	see right	Nurses expressed giving false information of long-term effects on fertility with injectables; changing methods reserved for cases with "real medical problem" vs patient preference (irregular menses) (-)	Perception by nurses that BC encouraged younger age of initiation of sex, called adolescents "children;" one advised patients should "stick to normal morals" instead of "running around" with many partners, would withhold contraception until asking questions about whether "they had boyfriends, why they had sex so young, whether they had told their mothers and why they wore mini-skirts." Resistance specifically to ECPs as well under perception of abortion	N/S
5	68% HCPs identified as Christian (18% RC*) 7% Muslim; asked if would prescribe for daughter, 84% HCPs would prescribe ECP while remaining 16% advised abstinence; 46% thought national government should be more involved in promoting adolescent SRH (+)	5.3% (3 nursing assistants) said they were never trained on ECP; 55% reported no special training on adolescent SRH needs, all requested more knowledge about specific needs. 79% wanted training in post-abortion care; 36% had prior training on ECP (-)	80% did not have guidelines on adolescent SRH services, 16% had guidelines that were not used. Not always age specific	22% of respondents did not provide contraception on basis of personal religious belief; 48% of respondents would offer ECP if brought in by police for rape; 9% reported they could not provide contraceptives due to institution (RC clinic)	Limited training for ECPs, with HCPs desiring more training from national government

6	More than 33.3% HCPs reported they would give BC to patient who were <18yrs, unmarried, in school, and w/o children	Providers felt highly competent to provide pills, progestin injections, condoms but often not to provide IUDs, ECPs, barrier methods other than condoms; public facilities more likely to feel competent (+,-)	<33% believed there were effects of long-term infertility, 20% would discourage use of injectable due to perceived SE, preferred abstinence	38% of HCPs in all facilities requested partner consent if <18yrs for fear of confrontation; of those, 23.5% noted reasons including discouraging use by youth with no children, fear of harm by contraception, to scare young people from sex; 14% providers noted morally unacceptable to provide BC as parents themselves	Guidelines, national policy only available in 11 of 102 facilities (10.8%); training recently provided to public hospitals to greater degree than others (64.9% compared to 22.2-38.2%)
7	Effects of local religion and community seen in HCPs, reflection in personal counselling practices (-)	HCPs showed correct knowledge of risk of expulsion of IUD, and concern for lactation with OCP use (+)	n/s	some providers preferred FBM or condoms at baseline; 1 physician expressed does not counsel on IUD, injection, or pills at baseline for youth	n/a
8	HCPs reported having had discouraged young girls from taking up contraceptives; expressed moral dilemmas in matching traditional and cultural beliefs with modern techniques; some language barriers noted between elderly HSP and poor intergenerational communication (-,-)	HCPs felt uncomfortable to provide depo, implants and IUDs due to lack of STI/HIV protection but also concern for infertility; aware of methods and informed of advantages/disadvantages in methods and hesitated in tubal ligation for those younger; providers did not always feel confident answering young peoples' questions and communication barrier; some clinics expressed that administrative over clinicians attending training sessions (-,-)	n/a	Some providers expressed patients "have a right to know their growth and development" to right information, privacy and confidentiality; provider expressed restrictions to unmarried youth for family planning and very young pts (14yrs); one expressed "at the end of the day the choice is theirs"	Training and information sessions disseminated infrequently from administration, national guidelines as source

10	44.0% HCPs discussed reproductive goals with clients (=)	80.9% providers discussed different methods with clients; 43.1% helped client select a method, 52.6% explained how to use, 81.0% discussed SE; 29.8% discussed potential warning signs related to problems with selected method; 50% received in-service training in FP provision (+)	n/a	n/a	52% of facilities could provide written national FP guidelines, 39% could describe any quality assurance method
11	Three country analysis showed shift of use from pill/injectables to IUDs, implants and sterilization	Changes over 5 years for reports had 14 countries with changes of less than 5% points; greatest increases in Cambodia (20%), Rwanda 16%, Benin 14%, Egypt 11%; greatest decreases in Tanzania 12%, Honduras 8%, and Ghana/Pakistan (6% each). Modern contraceptive prevalence rate was not statistically significant with either 2 surveys	n/a	n/a	n/a
12	Patients reported lack of privacy noted at clinics, overworked staff with short discussions (-)	Patients noted overly technical language and minimal explanations, no HCPs were trained on working with adolescents (-)	Nurses did not understand injection SE	n/a	n/a
13	FGDs: patient reported being scolded and poor treatment by health facility staff (-)	Patients reported providers holding essential information, primarily by nursing staff (-)	n/s	n/s	n/a

*Articles 9 and 14 not included as noncontributory to provider perspective

**Abbreviations: RC- Roman Catholic

Analysis of studies with Method Information Index (MII)

Studies undertaken by AK Jain (Article 9 and Article 13) were less applicable to the initial study design but yielded a specific comparable metric for counselling efficacy as perceived by patients. For this reason, the articles were analyzed for results separately in addition to the placement of relevant information within the table. As a whole, all countries analyzed in Article 9 showed a small improvement in counseling with an MII score increase of +5.5%; sub-Saharan Africa has a lower increase at 3.5% versus other regions at 5.5%. However, overall the findings indicate the MII score average at 33.9 to 39.4 shows that there was a minimal increase in the quality of counseling due to the low score. For youth aged 15-19 years old the scores varied with a range of 3.1-41.6% for all countries, 3.5-32.6% in sub-Saharan Africa, and 3.1-42.7% in all other countries. For those aged 20-24 years old, the score ranges were the following: 16.1-42.3% for all countries, 16.-42.8% for sub-Saharan Africa, and 18.7-42.3% for all other countries. All three in-depth analysis countries (Cambodia, Rwanda, and Tanzania) showed a shift from injectable lasting 3 months and oral contraceptive pills which are variable with patient use to longer term methods such as IUDs, implants, and sterilization. MII scores generally increased with an absolute change in pill and injectable use was +16.8% and +15.6% in Cambodia, +9.5% and 15.6% in Rwanda, and -17.8% and -10.7% in Tanzania in comparison to the larger increase in counseling quality for IUDs and implant use and sterilization: 39.4%, -0.6% and 45.3% in Cambodia; 26.6%, 49.4% and -1.0% in Rwanda; and +0.7%, -1.3% and -18.0% in Tanzania (Jain 2015). Median MII was 33% for women aged 15-19 women in comparison to 42-47% for all other age groups, indicating a lower quality of counselling in younger women in regard to methods.

In Article 13 specifically analyzing India at a national level with MII, mixed-effect logistic regression models indicated that contraceptive users were receiving low information with only 15.6% of respondents reporting counselling for all three items of the MII. This finding held across all major states and different socioeconomic levels. This may suggest that providers or patients may not have had this information or patients did not remember being told the information (Jain AK, 2017). Different methods were more likely to receive full information with IUD users more likely to receive full counseling (AOR +1.59, $p < 0.001$) in comparison to

sterilization users (AOR +0.64, $p < 0.001$) and less likely to receive full counseling in comparison to injectable users (AOR +1.68, $p < 0.05$). Additionally, MII was specifically low for sterilization at 13.1 with 33.3% of women reporting they were not told of the permanency of sterilization. Findings showed a statistically significant greater likelihood for women aged 25-39 to be fully counseled in comparison to younger patients (aged 15-19 at AOR +1.00 vs aged 35-39 at AOR +1.99, $p < 0.05$). Of significance in both articles, results did not find a statistically significant correlation between MII and the modern contraceptive prevalence rate (MCPR) for either time points.

Discussion

The importance of contraceptive use for adolescents has been supported by much of the literature in the past particularly in regard to supporting economic and social autonomy and reducing poor health outcomes (Cleland et al 2006; Ahmed et al 2012; Germain et al 2015; Radovich et al 2015). Multiple studies have shown an increase in contraceptive uptake among women who are provided with counseling and education about modern contraceptive methods (Saeed, Fakhar, Rahim, & Rabassum, 2008; Crede, Hoke, Constant, Green, Moodley, & Harries, 2012; Lee, Parisi, Akers, Borrero, & Schwarz, 2011). However, many clinics can struggle in providing appropriate care to adolescents in the field of sexual and reproductive health with different routes for method provision at non-family planning health clinics, pharmacists, private providers, or through social and community marketing strategies (Cleland et al 2006). In regard to contraceptive counseling, it is significant to consider that “Most women present at family-planning clinics having already decided which method they want; failure to obtain that method is probably the one biggest deterrent to adoption and sustained use” (Cleland et al 2006). Women in prior studies have recounted poor consultations ranging from dissatisfaction with discussing concerns and information, lack of time for encounter, poor knowledge basis and erroneous information, and predominant provider influence on selecting the method for the patient (Bitzer, Marin, & Lira 2017). Younger patients are at a disadvantage in comparison to their older counterparts; young women often are less knowledgeable in modern family planning options and less likely to engage in family planning discussions with health workers (Wulifan et al 2017). Given that many youth often need to overcome many societal stigmas and barriers to request care including perceptions of unfaithfulness or loose moral character, resistance to family-based and religiously-based social pressures, or overall distrust of health care providers, the provision of care to young women should be mindful of the pressures patients face and provide non-judgmental and accurate care.

Articles reviewed highlighted a perception by health care providers of a low knowledge foundation for young patients. Chen et al noted 33% of patients had no knowledge of OCP effectiveness and another study also in China found over 90% of providers stated that patients

had inadequate or limited education in healthcare (Article 2). A study in Uganda (Article 6) reported provider's perception that 72% of patients had low information and 63% viewed concern for side effects of contraceptive as a reason of nonuse. These highlight the need for proper counselling and the gap in community knowledge with young patients. Studies focusing on patients (Article 1, 4, 6, & 9) confirmed many of these concerns. In Chen et al, patients who had never used OCPs frequently had not spoken with physicians (93.2%) despite have concerns about the risks and side effects (46.7% respondents). Patients expressed beliefs that the IUD and devices could migrate within the body (Article 4, 7), methods could cause chronic illnesses like hypertension or anemia (Article 9), cause breast cancer or other cancers (Article 1, 9), or affect infertility for the man or woman (Article 4, 6, 9,). Patients in Ghana expressed that "contraceptives cause cancer especially the pills....[and that] My close friend cannot give birth because she was operated upon to rectify that problem caused by her use of family planning," which explicitly highlights the concerns expressed and at times the source (Ayanore MA, Pavlova M, Groot W 2017). They were grouped as a concern for bodily illness (acute and chronic illness) or those surrounding fertility and protecting future children in cultures where motherhood often was idolized within the community. As concerns for side effects and health risks became an increasing reason cited for non-use as determined by Sedgh et al, there presents a pivotal role for addressing these recorded health concerns by patients especially with young patients who are early in their reproductive lifespan (2016). While young patients had lower knowledge about reproductive health, there was a stronger understanding in communities about the need for protection against sexually-transmitted infections and condom use, particularly in sub-Saharan Africa. This may reflect historic priorities in regions heavily hit by the AIDS epidemic to focus on condom use in teaching youth.

Cultural aspects of the communities appeared to affect patient's contraceptive demand and preferences. While religion does not have a uniform effect on patient's pursuit of contraception, the impact of the beliefs and integration into the community was seen to be significant for patients. Ugandan patients expressed Articles 4, 6, 7, 8 and 9 reported strong influence of religion in communities in South Africa, Uganda, Pakistan, Kenya and Ethiopia expressed by both providers and patients, which many providers believed contributed to low

perceived demand. In Uganda, 30% of providers believed religious concern impacted the low demand in the community and in Pakistan, patients also reported fear of exclusion from religious or community practices if they used birth control or sterilization methods (Nalwadda, Mirembe, Tumwesigye, Byamugisha, & Fixelid 2011; Nishtar, Sami, Alim, Pradhan, & Hasnain 2013). Patients noted concerns about side effects were more likely to gather knowledge from community sources such as friends and community leaders. There could likely be many reasons for this including a greater comfort in asking peers in their experience, distrust of providers, concern for social biases or discrimination, or other unlisted reasons. A qualitative study by Capurchande et al done in 2016 (Article 12) elicited an intriguing source of information in assessing modern and traditional contraceptive use. In Mozambique, authors reported that young women perceived traditional methods like plants and seeds as more effective and, sometimes used them in conjunction with modern methods. Young women often would consult a group of older women, the “*massungukates*,” in their community on issues of marriage and sexual and reproductive health. Much like religious leaders, these women were seen as leaders within their community on social and cultural matters and could influence perceptions, potentially positive or negative, on the methods at hand. In multiple studies, opposition to contraceptives expressed by the husband or elders impacted women’s desire to use modern methods despite strong knowledge of the methods (Gage 1998; Kadir, Fikree, Khan, & Sajan, 2003; Samandari, Speizer, O’Connell 2010). Our studies found a similar impact with family members with patients reporting IUDs as strongly disliked by male members (Article 12) and strong positive views of early teenage pregnancy and male virility without transfer of sexual health knowledge between families (Article 4). Nearly the majority of providers in Uganda view disapproval by male partners and peers (49% of respondents) and cultural norms of large families (43% of respondents) as major contributors deterring demand for contraceptive within the community, which was a larger proportion than effect of religious beliefs (Nalwadda, Mirembe, Tumwesigye, Byamugisha, & Fixelid 2011).

In regard to the direct counseling of patients, there was varied focus on patient’s own desires for specific methods, which when addressed showed to be successful in initiating contraceptive use. In Tumlinson, Pence, Marshall and Speizer’s study in Kenya, the group focused on direct

counseling with patients (2015). While only over half of patients (57%) reported being asked about preferred methods, the majority of patients felt comfortable asking questions and 79% of patients felt all their questions had been answered. Patients who felt they were treated “very well” were more likely to be using a contraceptive method (likelihood +1.1) and greater chance of returning (likelihood +1.2), which was greatest in 15-19 year old patients (likelihood +1.44). Teens are more likely to return to these clinics respecting their autonomy and sharing with providers concerns over their methods. In this study 47% of clients had received information on multiple methods and 35% had been asked about their reproductive goals. While encouraging, there is more room for improvement in asking about desired goals especially when addressing teens longer term ideas about fertility. In Article 9, many patients were using multiple methods at time of interviews with 46.8% of 15-24 year old patients likely to use LARCs, the high proportion of all respondents compared to other age groups; increased knowledge about contraception also was associated with a greater likelihood (+1.77) of using contraceptive and many expressing future desired use for alternative methods (implant for 91.7% patients). Meeting an unmet need and demand for contraceptives to be fully realized requires an understanding of multiple methods to tailor for each patients’ desires, since as shown in the last study, women may desire alternative methods to their first method. In this situation, patients reported concerns for privacy for IUD insertion as a major cause, however all providers should consider the desires of the patient. Other studies referenced showed a greater preference for discrete methods such as injectables or IUDs that were not detectable by partners and reflect a different set of needs that can differ with each patient population. For workers in smaller communities and those with more restrictive cultural beliefs around adolescent pregnancy and sex, this fact can be the impact between patients who may otherwise desire to use rhythm methods or condoms to more reliable methods such as injectables or later for IUDs. Additionally, as many youth reported switching methods due to side effect concerns and only occasional visits to clinics, it is important that providers feel comfortable addressing patient questions on side effects, alternative methods, and to best be able to counsel the adolescent to the best method for their reproductive goals.

Providers' perceptions and challenges illuminated the strong ethical and moral conflicts providers experienced in providing contraceptives to teenagers. Nurses in Kenya (Article 8) described youth as "difficult to work with" and believed patients as ignorant and would hide information from healthcare providers (Godia, Olenja, Lavussa, & Quinney 2013). Similarly, in South Africa, nurses believed teenaged patients were truants and undertook criminal behavior, a stigmatization that patients echoed was reinforced in the behavior of nursing and older staff members and even other patients in waiting rooms (Wood & Jewkes 2006). Nursing and healthcare providers with lower levels of training were noted to have more ethical concerns with treating adolescents. Often in-patient interviews, concern with poor quality of care would be more directed towards nursing or nursing assistants rather than physicians. It is unclear in these studies the prevalence of nurses in these areas or their independence in delivering care in these regions. As more community health workers and commercial drug sellers provide family planning services to young women, the role of nursing and healthcare providers serving an accessible, trustworthy and nonjudgmental member of the care team and source for questions remains important. This is particularly noteworthy in the public sector where many countries studied, such as Uganda and South Africa, include free contraceptive access to women regardless of age; discouraging patients at these clinics may be counterproductive as young women using LARCs are more likely to be using a public sector source especially in sub-Saharan Africa (Radovich et al 2018). Specific religious leanings of the providers had some impact on counseling. In Swaziland, 22% of providers did not provide contraception on basis of personal religious beliefs and 16% stated they would advise abstinence instead of prescribing emergency contraceptive pills (Mngadi & Zwane 2008). In Pakistan (article 7), the local community was strongly religious, and some providers preferred fertility-based methods or condoms for all patients, while one specifically reported they did not counsel on IUDs, injections, or pills to teenagers without exception. This is supported in Jain's study in 2016 with Pakistan having the lowest MIIs at 19% and 13% of all patients receiving full counseling on methods and side effects. Interviewed nurses in different studies expressed explicit concern related to age of the patients and that they were encouraging immoral behavior, particularly within sub-Saharan countries. In Kenya and Ghana (Article 8 and 13), healthcare providers reported actively

discouraging patients to use birth control methods, citing concern for reconciling their own traditional and cultural beliefs with modern techniques. In Article 3, 15% of Nigerian providers “would give a serious reprimand” for patient’s emergency contraceptive pill use. Article 4 expressed that teens were scolded and felt they could not stand up to nurses, while a nurse stated she advised patients to “stick to normal morals” assuming they had multiple partners and some would withhold contraception until asking whether “they had boyfriends, why they had sex so young, whether they had told their mothers and why they wore mini-skirts” (Wood & Jewkes 2006). Subjecting patients to this level of intrusiveness and judgmental care hampers the desire for patients to return and engenders negative views of healthcare providers. This could be one reason teenagers in some regions would change methods without consulting providers who might only be seen as unsupportive figures.

Furthermore, clinical providers noted communication challenges in regard to dealing with intergenerational communication and also with specifically working with adolescent patients. Studies in China (Article 2) highlighted that younger, more educated providers were more likely to feel comfortable counsel unmarried young patients than older distributors. Within this study, while over 92% of providers wanted more in-depth information for adolescents, the time of initiation between the ages of 18-20 years old was strongly disagreed upon with only 53% arguing for contraceptive education at time of sexual health education. Interviews in Kenya (Article 8) highlighted that providers did not always feel confident answering patient’s questions and some language barriers between elderly healthcare providers and poor intergenerational communication. In Mozambique (Articles 12), patients reported that practitioners used overly technical language and had minimal explanations of methods; some of this could arise from the fact these professionals noted they had zero training on working with adolescents. In Swaziland and Kenya (Article 5 & 10), only 55% and 50% of health care providers respectively had specialized training in working with sexual and reproductive health needs. This could represent a very strong impact in regions with large populations of adolescents, particularly in sub-Saharan Africa. In Uganda, slightly above 33.3% of healthcare providers would give birth control to unmarried, childless women under 18 years old (Article 6). In Jain’s multi-country study, the MII and likelihood of full counseling for 15-19 years was only 33%

compared to 42-47% for all other age ranges, a more pronounced 9-14% difference in comparison to 5% for other regions (2016). In Jain's studies of Indian DHS data and within the MII index, older patients had a greater adjusted odds ratio for receiving counseling with 30-39 years olds as nearly twice as likely to receive counselling than 15-19 year olds (Jain 2017). Despite the support of the national government for free unrestricted access to contraceptives for adolescents in Uganda (Article 6), 38% of healthcare providers request partner consent for fear of confrontation of family members for patients under 18 years old and 23% would actively discourage young people to have sex or use contraception. As studies show that adolescents are likely to respond positively towards contraceptive use with appropriate counseling, there is room here for providers to see improve outcomes in meeting unmet contraceptive needs of patients by uniformly counselling younger patients in a nonjudgmental and appropriate manner.

One of the struggles noted in nearly all studies was a lack of information by providers and of the national policy or trainings staff on appropriate knowledge and counseling. Similarly, with moral bias, the stratification of training often reflected their knowledge base of the methods with physicians or family planning providers having the most familiarity with methods over nurses or pharmacists. In Nigeria (Article 3), 97% of physicians had heard of emergency contraceptive pills compared to 52% of community health workers with physicians possessing the highest level of knowledge on the methods at 35% in comparison to community health workers (23%), pharmacists (15%) and nurses (9%). In Swaziland (Article 4), 3 nursing assistants said they were never trained on emergency contraceptive pills. Direct knowledge of method effectiveness and side effects were also varying in their accuracy. Interestingly in China, 21.3% thought there were significant risks with OCP use with only 33% of doctors correctly identifying the efficacy of OCP in preventing pregnancy. In Nigeria (Article 3), 44.4% of healthcare providers incorrectly identified time frame for use of emergency contraceptive pills and 39% of providers believed it help induce an abortion. Providers in Uganda also expressed concerns with long-term infertility linked to contraceptive use and nurses who did not understand injectable side effects in Mozambique (Article 12) Providers also expressed greater preference for certain methods in comparison to alternatives often in regard to information. Providers in Uganda reported feeling

competent to provide pills, injectables, condoms but often did not provide IUDs, emergency contraceptive pills, or alternative barrier methods beyond condoms, though providers at public facilities were more likely to feel competent in these alternative methods. This is particularly interesting given the public facilities in this study had recent in-service trainings on national guidelines of contraceptive use, with nearly double the amount reporting recent provider training on methods (64.9% compared to 22.2-38.2% of institutions), highlighting the possible role of future training to improve this metric. Provider preference in counseling for certain methods is strongly evident in the evidence posed by Jain. His data in India showed that IUD users received more information than other methods on side effects, how to manage them, or alternative methods with sterilizations, pills, and injectables receiving low scores for MII. In fact, in his study, 52% of pill users, 44% of injectable user, 35% of IUD users, and a shocking 63% of sterilization methods users received no information on the methods they used (Jain 2017). In communities that value childbearing, male fertility, and motherhood highly, these findings highlight the priority that should be placed on counseling for nonreversible methods. Overall, findings of provider method preference are concerning when combined with reports of provider bias in counseling on method choices or on side effects for methods. In Article 4 where nurses expressed a strong moral bias to counseling younger patients, nurses expressed giving false information on long-term effects of injectables and believed changing methods was reserved for “real medical problems” over patient preference or dissatisfaction with side effects (Wood & Jewkes 2006). These numbers and qualitative findings in other studies highlight the fact providers exhibit preference to certain methods over alternatively, strongly correlating with knowledge and familiarity with method.

For facilities that had national guidelines and policy supporting increased access and needs, many providers were unaware of this support. In Article 5, 80% of interviewed clinics did not have guidelines on adolescent sexual and reproductive health services with another 16% that had guidelines that were unused. Ugandan national guidelines were only available in 11 of 102 facilities, approximately 10.8% of clinics evaluated (Nalwadda et al 2011). In Kenya (Article 10), only 52% of facilities could provide written national family planning guidelines and only 39% of facilities could describe any quality assurance method to their program or counseling practices.

These findings highlight a key factor that policy implementation can struggle to reach the provider at the ground level and needs to be reinforced and reintroduced over time. Over time we need to reassess policies and practices at our lowest community levels to remain in accordance with national ambitions, as expressed by Tumlinson et al that to excel in client treatment we need to continue to assess providers' technical competence. Potentially, providers may see improved uptake of contraceptives with the assistance of readily available guidelines or tools from either national or international sources to aid in determination of methods and patient benefits. In interventions utilized in urban and rural health facilities in Iran, use of decision-making tools provided by the WHO were found to have a positive impact showing improved communication between providers, increased technical competence, and greater quality of information provided to clients (Farrokh-Eslamlou et al 2014). Overall, there exists guidelines for youth-friendly counseling that need to become more predominate at the local level in practice.

Positively, many providers expressed a desire to improve the care provided for adolescents and respect adolescent contraceptive desires. In both rural and urban regions in China (article 2), over 80% of family planning workers were willing to provide counseling to unmarried people regardless of their personal views and 92% of providers desired more in-depth and explicit information on sexual and reproductive health for adolescents. All providers in Article 5 despite personal concerns on contraceptives requested more knowledge about the specific sexual and reproductive health needs for adolescents and 46% advocated for more national government presence in promoting adolescent sexual reproductive health needs and 76% for training in post-abortion care. In Article 8 where providers expressed discomfort with modern methods and counseling patients due to both communication barriers and concern for infertility or side effect profiles, some providers encouraging expressed that young patients "have a right to know their growth and development" to right information, privacy, and confidentiality, with one provider reflecting that ultimately "at the end of the day, the choice is theirs" (Godia et al 2013). Operationally, this study noted that administrators instead of clinicians were attending training sessions for adolescent counseling and highlighted the priority for physicians who work with their patient population to best advocate for their needs. Ayanore, Pavlova, & Groot found

in their study that women were more likely to overcome social opposition at home to contraceptive use and address side effects after receiving focused counselling services (2017). Of interest in both Jain's studies, he determined that while modern contraceptive prevalence use increased over time, his MII index related to quality of counseling did not significantly increase over this time and noted that the two metrics did not correlate. One could conclude that the two remain unrelated and therefore improved counseling would not lead to reduction in unmet need. However, it does question the increase in method use of all aged women who may have been improperly counseled or may become more likely to quit their method due to incomplete counseling on side effects or method use given women most commonly quit methods due to side effect concerns (Sedgh et al). These sentiments expressed show the shift in many regions to desire additional training and familiarity with the needs of their patient base and receptive attitudes towards many of the desired interventions to improve the discussion challenges this review has found. A study in Ethiopia undertaken in 2017 highlighted how a dual approach to increasing demand for contraception was successful (Fikree, Abshiro, Mai, Hagos, Asnake 2017). The program held information sessions with teens and simultaneous LARC-training and youth friendly services training for providers, which ultimately showed increased likelihood of patients in using LARC methods in intervention units. These strategies can be seen as possible areas for future success in methods counseling and improving services for youth.

Limitations

Through this systematic review, there were limitations present in analyzing the data. In some cases, records could be either positive or negative dependent on their use and account and were harder to analyze for their effect on the overall quality of counseling. For example, while a study might report one dramatically negative experience of a patient-physician encounter, it is difficult to determine if this was for all patients, the majority, or only a select few and if this occurred every time. Without firsthand knowledge of all the results, it is hard to extrapolate for its entirety. In this regard we also look at bias that may reflect these singular events. People are more likely to report negative rather than positive effects and have better recall of negative or particularly memorable encounters without remarking upon the bulk of the encounters. Furthermore, interview respondents for more qualitative studies can suffer from recall bias and may not have remembered the counselling at the time of the questioning. In regard to cultural effects, there was no standardization of analysis of studies when looking culture affect when viewing those in smaller or rural areas versus larger national surveys or urban areas. There was no control placed for those in more or less traditional areas and were globally compared between the listed studies. Additionally, there was inconsistent review of married versus unmarried counseling practices and perceptions by provider. This was mitigated by the indication if the study analyzed unmarried and married youth but leave significant room for improvement for future studies, particularly in regard to moral or ethical biases perceived by providers who may be more positive towards married over unmarried couples. Furthermore, there is a varying range of quality of study and quality of evidence. We did not include any systematic reviews and reviewed those with smaller sample studies and quality of evidence in including questionnaire-based surveys that were seen as equivocal to interviews. The comparison between the methods here is difficult and severely calls for an improved metric to compare counseling methods and information giving between patients and providers.

A significant factor that was not evaluated was the role of supply and provider type in the effect of counseling. For simplicity and to focus on the provider-patient relationship, we assumed in all cases that these clinics had a reasonable supply of all contraceptive methods available for

counseling and that is simply not the case in many of these countries. Our study did not consider the effect of national logistics and availability of contraceptive within healthcare system. Ignorance of this may distort the preference for provider counseling practices and their knowledge base. For example, Article 5 reported that 46% of clinical sites in land-locked, mountainous Swaziland did not have contraceptives in stock at time of interview, and additionally reported high health provider turnover at many sites. For many rural regions, supply chain management and reliability of the method was a major barrier to solving unmet need and is a significant concern in many sub-Saharan countries. Even within our reviews, many studies cited challenges in regard to privacy concerns, long-wait times combined with overworked staff for counseling services, and supply issues for methods. In urban Kenya, only 55.8% of clinics had a mix of methods provided and currently available for use with some clinics reporting prior stockouts of methods for over a year (Tumlinson et al 2015). In Swaziland, 46% of facilities had no contraceptives in stock and additionally noted high provider turnover at sites that may affect counseling practices and the relationships between patient and provider (Mngadi, Zwane 2008). Privacy for patients may also affect the desire for methods that require greater physical exposure upon initiation. Overall, system wide effects in regard to supply chain and privacy need to be addressed to improve the one-on-one counseling practices and protected relationship between provider and patient.

Additionally, extrapolation of smaller studies to the national level are difficult to reflect upon with the context of national policies and history of method preferences. It is hard to assume that because one small study within a sub-Saharan country has concerns with religious bias by providers that other similar countries will have the same impact and legacy. In Cleland et al 2006, preference from methods can vary between neighboring countries with 34 of 96 countries having one method of contraception accounting for more than half of all use with most nations having 2 methods account for most use (Cleland et al 2006). For example, historically many countries in sub-Saharan Africa have had pushes to increase, specifically injectables that were readily accepted, that could impact the familiarity of providers and patients with that method and drive method selection and knowledge base. Within India, there are strong historical roots as well of female sterilization a method of choice after childbearing

years that may draw stronger preference to this method over other regions. Similarly, regions that have had marginalized women suffer from poor method or suspicion by family planning providers may impact both biases and contraceptive demand in regions. We do not assess these regional biases or history of practices of specific methods nor do we look into the history of legality of contraceptive practices which similar strongly differ between countries in the same regions.

Conclusion

Based on our results, there remains strong gaps in healthcare provider knowledge base and areas to tackle cultural perceptions around contraception use for both patient and provider use. Education may highlight low-level but more accessible providers for education and classes challenging cultural perceptions around contraception youth. Overall, there is greater expressed desire by providers and identified role for government policies to be disseminated and additional classes specifically on methods use, initiation, and youth-friendly counseling practices. Many poor counseling practices that revolve around poor understanding of method side effects may aim to assuage provider concerns in counseling younger patients and improve contraceptive use and quality of counseling in this regard.

Overall as discussed in Bitzer, Marin, & Lira (2017), the provider has a two-sided role in regard to contraceptive counselling. The physician is meant to be expert on the method and provide evidence-based medicine to teach patients and empower users to make an informed decision; he or she is also meant as a companion incorporating values and life goals of the patient to make their individual choice based on personal and sociocultural priorities of the patient. The provider therefore, in dealing specifically with adolescents, serves to introduce these young women to health care services as a whole and may impact their attitudes towards future healthcare seeking behavior. The physician has the duty to respect the wishes the patient in resource-limited settings and enable patients to make their own decisions. More research is needed to examine the impact of these relationships and into systems strengthening to enable a full spectrum of choices and respect the patient autonomy.

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COMPREHENSIVE REVIEW:
CONTRACEPTIVE USE AND IMPACT OF PHYSICIAN COUNSELING FOR ADOLESCENT PATIENTS
OF METHOD CHOICES AND SIDE EFFECTS IN DEVELOPING COUNTRIES

Introduction

Globally, millions of adolescent girls and young women face an unmet need for contraception and adequate sexual and reproductive healthcare to advance their social and economic well-being. Young women are at greater risk than older counterparts of experiencing unintended pregnancies, which can lead to early educational dropout rates and decline in overall incomes, and increased rates of health risks for the mother and child particularly for women aged 15-19 years old (Guttmacher Institute 2016). Improved modern contraception rates can reduce unintended pregnancies, maternal deaths, and reduce abortion rates (Guttmacher Institute 2016).

This article aims to further explore the significance of sexual health and pregnancy, overall determinants affecting contraception use in teenagers, basic knowledge of modern birth control methods and their side effects, the provider's role in regards to updating practices and combating myths, and proper counselling and physician approaches to discussing care options and provisions for adolescent patients in regards to contraceptive care and sexual health choices.

Impact of adolescent sexual health and pregnancy

Sexual and reproductive health education has become a refocus of international attention in the past decades as countries focus on reducing maternal and infant mortality and overall well-being of their populace. Pregnancy and childbirth complications are the second cause of death among 15 to 19 year-olds globally (WHO 2014).

Medically, adolescent mothers and their children are more susceptible to negative outcomes in comparison to older mothers. Adolescent pregnancies are linked to higher rates of complications such as anemia, malaria, HIV and other STIs, postpartum hemorrhage, and depression with later increased risk of obstetric fistulas (Morris, Rushwan 2015). Unmarried adolescent mothers are more likely to be unintended and end in induced abortion; nearly 4.5 million adolescents are estimated to undergo an abortion with 40% undertaken in unsafe conditions (Morris, Rushwan 2015). Teen pregnancies are also associated with receiving low

and/or inadequate prenatal care and possible long-term substance abuse (Morris, Rushwan 2015). Infants also face more long-term sequelae with teenage mothers including higher rates of preterm birth, low birth weight infants, asphyxia, and increased perinatal and neonatal mortality (Morris, Rushwan 2015).

Socially, adolescents face a greater risk of experiencing sexual coercion and violence; one study recognized that 10% of girls who first had sex before age 15 were coerced (Morris, Rushwan 2015). Teens are more likely to drop out of school earlier and fewer skills and educational and occupational opportunities (WHO 2014).

Determinants of contraception seeking and barriers

Adolescents in developing countries face many barriers to contraception and family planning services ranging from the culturally based, legal, and socioeconomic and demographic reasons. One of the major concerns regards the “urban-rural divide” that persists in many countries. In sub-Saharan Africa, rural women tend to have reduced contraceptive use and more children than urban women, which a study determined was due to inequity instead of an increased fertility desire (Gillespie et al 2007). Community health workers have attempted to improve access to services in rural areas however disparities persist between the groups. Multiple studies have suggested that “perception of a [patient’s] perceptions of a client’s own geographical and financial access to health care is also important regardless of actual time or distance from the service” (Thin Zaw 2012). Young women in heavily religious regions and countries like Pakistan that stigmatize sexual activity noted decreased uptake of contraceptives and can have a higher unmet need for family planning (Thin Zaw 2012).

There is currently no international standard for age of access to contraception or legal framework that enshrines a right to access for contraception. There is no agreed minimum age to receive contraceptives with access to confidential care varying between states even in the United States (Guttmacher Institute 2018). Countries in the African and Asian region and some countries in the Americas permit the persistence of cultural and religious customs that can limit or discriminate against teenage patients seeking health services (Patton et al 2016). Historically

some regions like former Soviet Union countries have banned contraception to any age of women such as in Albania until 1992 and face a greater struggle in acceptance or use of more modern methods over traditional methods of birth control (Medeiros Kent 2010). Financial barriers even in areas with supportive legal frameworks persist and can place additional burden upon adolescents in terms of cost of care and payments through insurance.

Sexual and reproductive health education and understanding are often lacking in developing countries. Many young women do not know how to avoid pregnancy and may feel too ashamed to seek contraception or educational services. Often this leads young women to look for alternative sources of information on practices from sources closer to home including their own social networks. Certain developing countries like Zimbabwe have an emphasis on “abstinence only education” in government run sexual health classes and can place negative emphasis on adolescent sexuality and behaviors (Amnesty International 2018). Another study found in areas where contraceptives were readily accessible, level of formal education correlated with uptake of modern contraceptive methods; urban women with at least secondary education had a significantly higher likelihood of using contraceptives compared to uneducated women, while this ratio was amplified with a nearly five times increased likelihood between their rural counterparts (Katende et al 2003). This is especially problematic in countries where culturally parents feel uncomfortable discussing these issues, fearing it give a perception of approval of pre-marital sex. Conversely, limited evidence shows that improved mother-daughter communication promoted rates of contraception use and improved self-esteem, illuminating this may be a key opportunity for parents to reduce stigma around sexual health (Patton et al 2016).

Adolescent patients are more likely to fail contraceptives or defer seeking effective methods for various educational factors and social factors centered around perceptions of methods or values surrounding sexual practices. Reasons contributing to this include “poor understanding of pregnancy risks, concerns about the effect of contraceptives on health or fertility and opposition from partners. Lack of knowledge of services, cost, shyness, and community stigma about sexual activity, and disapproving attitudes from providers are further barriers” (Patton et

al 2016). Partners who expressed positive attitudes towards family planning services were more likely to reflect positive attitudes and uptake by the patient in a study conducted in Uganda, highlighting the importance of partners perceptions of methods in increasing prevalence (Sileo et al 2015).

Methods of contraception

Overall, contraceptive methods can be divided into two categories: hormonal and non-hormonal based. Hormone-based methods include progesterone and/or estrogen based formulations of oral contraceptive pill (OCPs), levonoestrogen intrauterine devices, single-rod implant, . Methods can also be categorized as short-term methods or long-acting methods and reversible or irreversible. For example, the IUD (copper or hormone based) and rod implant are considered method of long-acting reversible contraceptive, commonly known as “LARCs,” due to their ability to provide protection against unwanted pregnancies for at least 3 years without maintenance. In the US, LARCs are first line recommendations for adolescents thanks to their safety and effectiveness with high continuation rates of 81% at 1 year (Richards, Buyers 2016). The CHOICE contraceptive research analyzed more than 9000 American women’s preferences for methods and found if barriers of use are removed, LARCs are highly preferred for teenagers and were linked to lower rates of pregnancy, birth, and abortion (Richards, Buyers 2016).

Hormonal	Non-hormonal
Daily OCPs	Barrier methods (male/female condom / diaphragm / cervical cap / sponge)
hormone IUDs	copper IUD
emergency OC pill	rhythm method
injectable hormone (depovera)	withdrawal
implant, patch	spermicide
vaginal ring	sterilization
	vasectomy

Table A: Contraceptive methods, advantages and disadvantages

Advantages	Disadvantages
<i>Subdermal implant (contains no estrogen)</i>	
Greatest efficacy. High satisfaction and continuation. Simple and quick insertion. Discreet. Immediate reversibility. Relief of dysmenorrhea and endometriosis symptoms. No effect on bone density.	Uterine bleeding, although not dangerous, may be frequent and prolonged. Small percent of users (6%–12%) report weight gain, but unclear if owing to implant use.
<i>IUDs (contain no estrogen)</i>	
Very high efficacy. Highest satisfaction and continuation of any method. Discreet. Immediate reversibility. <i>Levonorgestrel IUDs:</i> Treatment for bleeding, dysmenorrhea, anemia owing to menorrhagia, and relief of endometriosis symptoms. Safe for almost all teens, including those with complex medical conditions. No medication interactions.	Pelvic examination required for insertion, not recommended in those with structural abnormalities
<i>DMPA (contains no estrogen)</i>	
High efficacy. Simple and quick injection. Discreet. Relief of dysmenorrhea and endometriosis symptoms. No medication interactions.	Irregular bleeding common in first 3–9 mo. Possible increased appetite and associated weight gain. Visit every 11–13 wk.
<i>Combined hormonal contraception: OCPs, patch, ring (contain estrogen + progestin)</i>	
Good efficacy when used correctly and consistently. Widespread familiarity. Many non-contraceptive benefits. Easy for user to start (and stop)	Remember each day (pills), week (patch), month (ring). Visits to pharmacy for refills. Requires storage of medication. Increased contraindications and medication interactions including clotting risk (DVT/VTE), hepatic tumors

*Abbreviations: DMPA- depot medroxyprogesterone acetate; IUD-intrauterine device; OCP- oral contraceptive pills. Taken from Richards, Buyers 2016.

Preferred methods vary between region. DHS surveys of married women determined regional trends in method preference: traditional methods were more favored in Eastern European and central Asian countries, OCPs in Sub-Saharan Africa and northern Africa, and the IUD in central Asian countries (Bertrand et al 2014). In all methods, pregnancy must first be ruled out before continuing treatment.

IUD insertion carries minimal risks though steps must be taken prior to first insertion. The WHO regards IUDs as contraindicated with active sexually-transmitted infection, untreated cervical or endometrial cancer, history of gestational trophoblastic disease, or for those with uterine cavity abnormalities including uterine anomalies and submucosal uterine fibroids. A systematic review of IUD safety found patients aged 25 years old or younger are at increased risk of IUD expulsion particularly with copper IUDs, however this is based on mixed evidence; overall the review did not support an association of younger age with greater rates of pregnancy, perforation, infection or bleeding (Jatlaoui et al 2017).

Side effects

Many of the common side effects on long-term birth control methods are listed above in Table A under the disadvantages. Certain side effects can have more long-term effects and others are more short-term often only occurring at the start of use. For example, commonly the side effects subside after one or two months on the pill and often have limited effects upon initiation of a method (Clark 2001). OCPs were also perceived by teens to have positive long-term side effects such decreased cramps and lighter periods (Clark 2001). Non-hormonal IUDs like the copper IUD can exhibit heavier menses during regular periods and do not resolve on their duration of use while hormonal IUDs commonly have intermenstrual bleeding within the first 6 months before resolving. In November 2017, the American College of Gynecology and Obstetrics (ACOG) issued an updated practice bulletin for provider's reference with recommendations on implants and intrauterine devices determining that IUDs or implants are safe and effective options for adolescents (ACOG 2017). Despite public perception of a link of progestin to depression, a recent systematic review of 26 studies including randomized

controlled trials and cohort studies analyzing the link found minimal supporting evidence based on validated measures (Worly, Gur, & Schaffir 2018).

Knowledge of side effects is important when considering methods at hand and addressing patient education. Selection of methods may be impacted by such side effects as weight gain or irregular menses and bleeding. In a survey of US adolescents, most young women attested they would stop using a method that caused irregular menses (74%) or amenorrhea (65%) (Clark 2001). These become issues when considering continuation of Depo Provera or implant methods with progesterone basis.

Families' and friends negative accounts about contraception method safety was found to impact teens decisions to pursue contraceptive methods (Clark 2001). Each teenager's personal network of friends and family and their own experiences with different methods appear to color their own perception of a specific method. This is crucial where concerns and misconceptions may be amplified in smaller communities that had social taboos in discussing menstruation and sexual health particularly between the generations. In this regard, it is important as health professionals to educate patients and their families with medical facts to combat common stereotypes as every patient has a unique experience.

Patients may have a cognitive dissonance where the perceived risks of getting pregnant become less concerning than those of using a potentially "dangerous" medication regarding their short term or long-term health (Clark 2001). They may perceive inaccurate beliefs of possible long-term effects on their fertility or cancer risk as a greater immediate risk than that of becoming pregnant (Clark 2001). Inaccurate, negative information is often more memorable for teens than positive information about benefits of methods and frequently sourced to social contacts including friends and family members (Pritt et al 2017).

Additionally, it is theorized that bleeding and common side effects are substituted to justify their discontinuation of a method over their actual reason as it may be easier or more socially acceptable (Clark 2001). Some women who have received a device in the past may be encouraged to "wait [the side effects] out" before removal and have to request several times

before physicians complied (Clark 2001). Ultimately there are greater health risks associated with full-term pregnancy than with hormonal contraception use (Clark 2001).

Concerns unique to adolescents

Parents are not always guaranteed to be knowledgeable about sexual matters or to communicate with their adolescent children about sexual practices and safety. Qualitative studies in South Africa described how parents would refuse to talk to them about sex, gave them vague answers over concrete information, and would potentially punish children for raising the subject (Eaton et al 2003). Forbidding condoms and restricting their children often lead to lower use of condoms by adolescents (Eaton et al 2003). Parental role was also found to have an increased impact of contraception use, if albeit questionable ethically; parents in rural areas arranged for daughters to receive contraceptive injections from practioners as parents felt they could not give the proper guidance or supervision of sexual activities (Eaton et al 2003). Parental involvement is highly influential and should be encouraged and facilitated when possible to improve contraceptive compliance.

Adolescents visits starting around age 11-12 are recommended to have one-on-one interviews with providers to allow time to discuss issues of sexuality and sexual health topics including sexual orientation, behaviors, STI prevention, and contraception and to address any related questions (Richards, Buyers 2016). Encounters should foster patients in developing their autonomy and independence and interactions with the healthcare system. Early discussions in adolescence should determine what the patient understands of “sex” and encounters and gradually as the patient ages integrate greater discussion about their peer groups and personal preferences and desires (Richard, Buyers 2016). Normalization of maturing adolescent’s changes and sexuality development should be encouraged and focus on forming healthy, safe romantic and non-romantic relationships (Richards, Buyers 2016).

Adolescents also possess unique concerns regarding well-being and self-perception. Perceptions of invulnerability in relation to pregnancy and STD contraction or ambivalence in feelings of reproductive control may negatively influence contraceptive use. If a patient does

not perceive herself as susceptible to becoming pregnant, she will be less likely to pursue methods for protecting herself. Teenagers, specifically from 14-17 years of age, tend to have a cognitive ability to consider abstract future consequences and the ability to delay gratification; however these are still forming in this age category and may be difficult in stressful or emotional situations (Richards, Buyer 2014). Late adolescence (18-21 aged) usually is a period where teens have more capacity to plan for the future and may have long-term relationships that provide room to discuss more in-depth issues of healthy relationship and medical screening and how to best meet these goals (Richards, Buy 2014).

Physician counseling and practice

In many developing countries, physicians and health practitioners are responsible for health contraception counselling and improving health care outcomes for individuals. Independent studies have also evaluated health worker and social models where others including community health workers (CHWs) educate providers, however, major issues can arise in regards to poor confidentiality and lack of professionalism (Grant et al 2017). Practitioners must be held to a higher standards to educating adolescents in regards to promoting their overall and sexual health. Professionals need to keep a nonjudgmental attitude in advising options for health care in the context of patients' needs but also to recognize that certain regions and professionals may be more comfortable with different methods. Limited studies have evaluated of knowledge of the practitioners in relation to access and common use of different method types.

Education of method utilization and initiation appears to be significant yet actionable barrier to access for adolescents to effective long-term birth control even in high-resource areas.

Education of physicians was associated with increased LARC insertion in a survey of US-based physicians, with 31.7% of respondents noting lack of insertion training as a barrier (Luchowski 2014). IUD insertions also required two or more visits for 86.9% of providers and could prove a barrier in access to care (Luchowski 2014). IUD insertion appears to be solidified during residency training for OB/GYN providers and is a strong predictor of likelihood of provision (Luchowski 2014, Pritt et al 2017). Same day insertion of IUD practices were seen to be the most comfortable and higher rates of provision to women; regular counseling during visits

about benefits, side effects, and complications of possible methods works to increase patient awareness and knowledge about their choices (Luchowski et al 2014).

Physician knowledge of IUDs and other LARCs correlated with increased recommendation to patients and carried over when including social workers and school-based health educators in the US (Pritt et al 2017). This may explain some of the differences between specialty practices providing counseling. In a study examining adolescent counselling in 2018 performed in North Carolina, only 12% of pediatric practices and 38% of family medicine practices provided contraceptive guidance in comparison to 70% of patients seen at an adolescent medicine practice or OBGYN (Dixon et al 2018). All practices may be familiar with methods but the knowledge base and comfort with discussing topics including sexuality and methods may be limited in other specialties that less commonly address family planning topics. Amongst those in pediatrics, discussions of contraceptives fluctuated depending on the age or sexual history of the patient and was more likely to be done by younger providers (under 50 years old) or those who had attended contraceptives training (Papas et al, 2017). Residents trained in OBGYN were more likely to correctly answer knowledge-based questionnaires in a study in comparison to other specialties including internal medicine, pediatrics, and family medicine. These all illuminate targets for intervention to improve the rates of LARC and effective contraceptive use in developing countries as well as locally.

Negative factors influencing counseling adolescents focus on capacity and knowledge base, opportunity and environmental constraints, and motivation by the provider regarding negative attitudes and beliefs (Pritt et al 2017). Physicians surveyed in New York tended to filter patients for counseling through restrictive criteria and idealized IUD candidates as those demonstrating responsibility, maturity, reliability, and monogamy (Pritt et al 2017). A community health worker project in rural Uttar Pradesh showed that even “ideal” family planning providers altered their teaching methods according to caste and perceived education level. In the study, the researcher notes a specific family planning provider’s “decisions to limit her interactions left [lower-caste women] with less than comprehensive sexual and reproductive health knowledge after 2 years” and justified an inability to educate women beyond knowledge of minimal levels

by transferring ownership to the women's ignorance (Abbott & Luke 2011). The interviewed provider was noted to limit her interactions with adolescents in contraceptive counseling despite having a positive opinion of disseminating information to youth; she instead advocated for impersonal sources like books or radio or informal peer networks (Abbott & Luke 2011).

One consideration that should not be ignored is the continued education of adolescents of benefits of barrier methods in protection against sexually transmitted infections, especially in regions with high HIV-risk and prevalence. Promotion of more reliable methods of contraception like LARCs or OCPs should not discount the benefits of counseling on STD prevention with condom use at the risk of deterring youth from accessing the full range of sexual health counseling (Eaton et al 2003).

Counseling has also branched out to include cadres of nurses, community health workers, peer groups, and other non-physicians especially in rural areas. Examples include the barefoot doctor movement in rural China and "doorstep" female family planning workers in Bangladesh. Training of nonmedical personnel living within the community aims to increase accessibility of services and decrease social distance that may hinder communication between provider and clients within clinics, allowing community health workers to be perceived more as peers and become agents of change (Abbott & Luke 2011).

Recommendations for counseling

Providers should focus on establishing rapport during the encounter and in discussing options and give anticipatory guidance based on the individual patient's developmental stage (Richards, Buyers 2016). Belgian adolescents attested that they were more likely to be comfortable talking about sexual problems or contraceptives if they had visited the provider in the past and trusted him or her, though some expressed concern if the doctor was too well known to them or if they thought the doctor would tell their parents (Peremana 2000). Overall, patients want to visit a provider they trust and regard as experienced instead of someone who treated them impersonally (Peremana 2000). Regardless of age, open-ended and inclusive questions are important to normalize variable sexual preferences and behaviors and to obtain correct

information for counseling. Providers should avoid judgmental or leading questions when assessing sexual practices. For example, a provider should ask “How do you protect yourself from pregnancy and STIs when having sex?” in place of a more judgmental question such as “You don’t have unprotected sex, do you?” Conversations should be structured as a dialogue instead of a lecture to best address questions and give the opportunity to address beliefs and attitudes about “healthy” relationships (Clark 2001). Providers have a unique role and duty to identify the positive influence contraception could have on a teen’s life and future. Direct and specific questions about fears, worries, and negative information they have heard about hormonal or non-hormonal methods should be addressed. Additionally, even if a patient is not sexually active at the time of visit, anticipatory guidance should be practiced to openly discuss attitudes towards sexuality and different possible methods to prepare patients and be proactive.

In counseling and considering contraceptive options, it is important to assess the patient’s perspective of the positive and negative attributes of methods and the experiences of those or those around them. Knowledge gathering here illuminate opportunities for providers to offer accurate information about contraceptive safety and efficacy and reassure common concerns and address side effect concerns (Richard, Buyers 2016). Initial sessions should be longer to explain everything about the methods of contraception and be accompanied by supportive learning tools, like handouts, to reinforce teaching. In order to address many misunderstandings, how the chosen method works and its mechanism and reversal at an appropriate level of understanding for the patient may help assuage some of the concerns and fears about the method. Explanations may also demystify the source of side effects and not allow room for myths to develop. As noted by Clark, we need to describe that

“nausea doesn’t mean that the pill is ‘poisoning’ them. Instead they are just not passing the stomach acid through their stomach as they did before. The bleeding or spotting doesn’t mean that they are taking hormones that will cause them to bleed to death or develop cancer. It means that their uterine lining is “immature” and not very stable in the beginning of hormonal contraceptive use. If they understand these processes and thus decrease their confusion and anxiety when such side effects do occur, they should be more likely to comply with their method of contraception.”

The following are a list of best practices when counseling for contraception use (Levine et al 2015):

1. Trustworthiness, Expertise, Accessibility
 - a. Constantly exhibit through the encounter
 - b. Patients found to be most influenced by these factors
 - c. Trust → I trusted the counselor looked out for my best interest (vs. most available method)
 - d. Expertise → can have an MA or bachelors, but able to communicate that they have worked with many women and act as a guide
 - e. Accessibility → can return with questions
2. Active and memorable learning strategies
 - a. Planning, questioning, and repeating questions
 - b. Open-ended questions
 - c. Directed towards gap methods and handling side effects
3. Simplify the choice process
 - a. Categorize by the method type and/or convenience, effectiveness, etc.
 - b. Use a visual-method for effectiveness rating
4. Address lifestyle issues (POISE)
 - a. *Perceived advantages or disadvantages*
 - b. *Other's reaction*
 - c. *Image*
 - d. *Self-perception*
 - e. *Emotional reactions*
 - f. This section took the most training of providers in the study; needed to address they were separate questions and determinants
5. Address issue of side effects
 - a. Most common reason to stop a method
 - b. Inform and let them know temporary side effects
 - c. Develop strategies for how to react and cope with them when they appear; role-play how to handle these
 - d. "Which would be the most problematic side effect and what strategies can we develop for you to cope with these?"

6. Address accurate use
 - a. Avoid common mistakes and errors with planning reactions unique to each method
 - b. Visual cues to daily practice or reminders; where for information if missed
7. Form a plan for method switching
 - a. Often switch within a year
 - b. Active learning strategies on what to do if you want to switch
8. Mention dual use
 - a. Don't forget dual use or condom use during method use
9. Ask about pregnancy plans and address ambivalence
 - a. "Do you want to become pregnant in the next year?"
 - b. Identify for ambivalence and alert that these could lead to gaps in protection
10. Mention quick start (i.e. same day starting method)

Overall an emphasis is on allowing patients to choose the most effective method for them, to build a plan of use for accurate and consistent use of their chosen method, and to have a plan of action if they want to switch methods (Levine 2015). For example, one strategy to reducing nausea from OCPs include recommending taking the pill at nighttime before she sleeps, as nausea tends to peak after taking the pill (Clark 2001). Patients should be counselled that many side effects are short-term yet remain validated when they experience early and temporary negative side effects. Anticipate concerns about side effects and address these early and possibly have family members or significant others accompany the patient to address all peoples concerns, especially important in many developing countries where the partner's attitude can play an important role in contraceptive uptake and adherence.

In regards to physicians who express a moral dilemma, personal conscience should not be ignored. As ACOG Committee on Ethics remarks,

"conscience also may conflict with professional and ethical standards and result in inefficiency, adverse outcomes, violation of patients' rights, and erosion of trust if, for example, one's conscience limits the information or care provided to a patient. Finding a balance between respect for conscience and other important values is critical to the ethical practice of medicine."

However, we must take many factors into consideration when denying care including the potential imposition to the patient and its effect on patient health. It is possible that “claims of conscience are not always genuine...[and] may mask distaste for certain procedures, discriminatory attitudes, or other self-interested motives.” We must consider the “refusals that unduly burden the most vulnerable of society violate the core commitment to justice in the distribution of health resources” (ACOG 2007).

Concluding statements and future concerns

Similar issues with counselling adolescents arise in the US and other Westernized countries and can be adapted between countries according to best practice and evidence-based successful interventions. Misinformation about contraceptive methods remains a problem across multiple age groups and socioeconomic and cultural backgrounds; a survey of employees at Yale demonstrated a sustained belief that OCPs could cause breast (47%) or cervical (29%) cancer. Popular media and sexual health education should align to address common misconceptions and inform youth. Overall interventions focused on sexual and reproductive health services are most effective when they use a “combination of high-quality health-worker training, adolescent-friendly facility improvements, and broad information dissemination via the community, schools, and mass media” (Patton et al 2016).

Additionally, while we consider education of methods and attitudes with providers and patients alike, the necessity of proper supply and cost must be addressed. With the reinstatement of the Global Gag rule, the risk of supply chain errors and funding restraints might become a greater barrier for access to care in adolescents as NGOs and organizations are forced to choose between eschewing funding and providing a full range of family planning methods. These factors undermine the efforts to improve access to vulnerable populations and additional research to integrate improved family planning with HIV prevention and education and women’s education and job training programs. Political will and legal restraints also must support family planning programs in developing countries and support a safe environment for patients to discuss issues with patients without fear of repercussion or restraint to prevent best practices in counseling and testing.

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